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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	195

Application Number	09/677,476
Filing Date	10/02/2000
First Named Inventor	Ripley, John
Art Unit	2171
Examiner Name	Santos, Patrick J D
Attorney Docket Number	800433

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Reply to Missing Parts/ Incomplete Application
  - [ ] Reply to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
  - [ ] Landscape Table on CD
- [ ] After Allowance Communication to TC
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):
  - -- appeal brief in triplicate;
  - -- credit card payment form (PTO-2038);
  - -- postcard receipt.

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	TAYLOR RUSSELL & RUSSELL, P.C.		
Signature	Douglas D Russell		
Printed name	DOUGLAS D. RUSSELL		
Date	MAY 31, 2005	Reg. No.	40152

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	Ellen Huffman		
Typed or printed name	ELLEN HUFFMAN	Date	MAY 31, 2005

PTO/SB/17 (12-04v2)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 250.

Complete if Known	
Application Number	09/677,476
Filing Date	10/02/2000
First Named Inventor	Ripley, John
Examiner Name	Santos, Patrick J D
Art Unit	2171
Attorney Docket No.	800433

METHOD OF PAYMENT (check all that apply)

☐ Check ☑ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: _____ Deposit Account Name: _____

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims		Extra Claims	Fee ($)		Fee Paid ($)
_____	- 20 or HP =	_____	x _____	=	_____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims		Extra Claims	Fee ($)		Fee Paid ($)
_____	- 3 or HP =	_____	x _____	=	_____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		Extra Sheets		Number of each additional 50 or fraction thereof		Fee ($)		Fee Paid ($)
_____	- 100 =	_____	/ 50 =	_____	(round **up** to a whole number) x	_____	=	_____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	_____
Other (e.g., late filing surcharge): FILING A BRIEF IN SUPPORT OF AN APPEAL (41.20(b)(2))	$250.

SUBMITTED BY

Signature	Douglas D Russell	Registration No. (Attorney/Agent) 40152	Telephone 512-338-4601
Name (Print/Type)	DOUGLAS D. RUSSELL		Date MAY 31, 2005

Certificate of Mailing under 37 C.F.R. 1.10

I hereby certify that the correspondence attached hereto is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10, Express Mail Label No. EV 453152794 US, and is addressed to the Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below:

May 31, 2005
Date Mailed

Ellen Huffman
Ellen Huffman

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Ripley, et al.	Art Unit: 2171
Application No.: 09/677,476	Examiner: Patrick Santos
Filed: 10/02/2000	Attorney Docket No.: 800433
Title: SYSTEM AND METHOD FOR VISUALLY REPRESENTING HIERARCHICAL DATABASE OBJECTS AND THEIR SIMILARITY RELATIONSHIPS TO OTHER OBJECTS IN THE DATABASE	

Mail Stop Appeal Brief - Patents
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APPLICANT'S APPEAL BRIEF UNDER 37 CFR 1.192

Dear Sir:

This Appeal Brief is submitted in support of Applicants' appeal of the Office's final rejection of claims 1-25, having a mailing date of December 28, 2004. Applicants responded to the Office's final rejections and requested reconsideration and reexamination on February 28, 2005.

Three sets of arguments are presented in the alternative in this Appeal Brief. The arguments include (1) disqualification of U.S. Patent 6,618,727 issued to Wheeler et al under 35 U.S.C. § 103(c), (2) the Office has failed to establish a *prima facie* case of obviousness, and (3) the claims are not obvious under the Graham factual inquiries.

APPEAL BRIEF CONTENTS

1. REAL PARTY IN INTEREST

The real party of interest is the assignee of record, Infoglide Corporation. At the request of Infoglide Corporation, the Secretary of State of the State of Delaware issued a Certificate of Amendment of "Infoglide Corporation" on July 27, 2001, changing its name from "Infoglide Corporation" to "Infoglide Software Corporation".

2. RELATED APPEALS AND INTERFERENCES

No other appeals or interferences are pending which would affect, or be affected by, or have bearing on the Board's decision.

3. STATUS OF CLAIMS

Claims 1-25 are pending in the application, and claims 1-25 have been finally rejected in the second and final Office Action having a mailing date of December 28, 2004. Claims 1-25 have been finally rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (U.S. Patent No. 6,594,673) in view of Wheeler et al. (U.S. Patent No. 6,618,727). The rejections of claims 1-25 are being appealed.

4. STATUS OF AMENDMENTS

After a first Office Action, Applicants amended claims 1-4, 8-11, 13-16 and 18-19 to further distinguish Applicants' claimed invention and to enable allowance of the claims. Applicants also added new claims 20-25. No amendments have been submitted subsequent to the Final Office Action. Claims 1-25 are shown in Appendix A.

5. SUMMARY OF INVENTION

The invention is a computer-implemented visualization model showing hierarchical documents and similarity relationships between the documents. Figure 1 depicts a high level flow diagram of the method according to the current invention, and is described on page 7, line 42 through page 9, line 193 of the specification. As described in relation to Figure 1, a user

identifies a reference document and associated reference attributes or fields 101, determines a need to find target documents and associated attributes 102 having similarity relationships with the reference document and associated attributes, develops an appropriate search criteria and submits the search criteria to a query manager 103. The query manager initiates a similarity search 104, using a similarity search engine, of one or more target databases to find at least one target document and associated target attribute that have a similarity relationship with the reference document and reference attribute, respectively. The similarity search engine returns a similarity search result set designating at least one target document and associated target attribute 105 along with similarity relationships between the reference document and the target document based on similarities in the documents' attributes. The designated target documents are sent to a visualization model 106, where the target document is represented as a model node 108. The result set is also sent to the visualization model 107, where each similarity relationship is represented as a model edge 109. A model edge is an entity in a visualization model that relates to connections (representing similarity relationships) between two documents, such as a reference document and a target document. The visualization model then displays the model nodes, including the node representing the reference document, connected by the model edges 110. In a preferred embodiment of the disclosed invention, the similarity search engine used is disclosed in U.S. Patent Application No. 09/401,101, issued as U.S. Patent No 6,618,727 by Wheeler et al.

Regarding the similarity search result set, containing a similarity search result score, it should be noted that the Wheeler reference incorporated by reference into Applicants' specification performs a similarity search between a reference document having at least one reference attribute and one or more target documents having at least one target attribute stored in

one or more databases. The returned similarity search result set 105 in Figure 1 of the current specification includes a similarity search score between the reference document and the one or more target documents that may be indicated by any designated contiguous range of numbers, such as between 0.0% and 100.0%. This parameter of the similarity search result set is illustrated in Figure 25 and described in column 20, lines 36-47 of the Wheeler reference. Figure 25 shows a side-by-side comparison of the similarity search results between a first anchor document 340 (Primary Key 003) and a second document (Primary Key 001). As shown in the Score column 341, the similarity score between the anchor document and the second document is 33.33%, while the similarity score between the anchor document and all offender documents is 29.56%.

The above description in the Wheeler reference corresponds to the description of Figure 14 of the current specification described between page 20, line 445 and page 21, line 469 of the current specification. In particular, on page 21, lines 461-468 of the current specification describe an application of a similarity search score that increases as one moves up the Z-axis of Figure 14. The top of the Z-axis represents a 100% similarity score between the reference or anchor document and the target documents, and between the attributes of the reference or anchor document and the attributes of the target documents. The degrees of similarity (represented by model edges) between the model nodes 1402 are calculated relative to each other, and the heights of the blocks along the Z-axis are represented of the degree of similarity.

It is pointed out that a similarity search may always provide a search result, even though the search result may indicate a 0.0% degree of similarity between documents. A filter, such as a database filter, provides a binary output, in that it rejects all documents in a stop band and passes all documents in a pass band. There is no correlation between a database filter and a similarity search engine.

Figure 2 depicts the visualization modeling process illustrated in Figure 1 as reference 110. Figure 2 is described on page 9, line 194 through page 11, line 235 of the specification. As described in relation to Figure 2, representations of the hierarchical target documents received from the similarity search engine and the reference document 202 are represented as model nodes 203 by the visualization model. The visualization model performs a lookup in a unique nodes list 206 to determine if a new node already exists. If the new node does not exist, it is added to the unique nodes list 206 to form an updated nodes list 208. Similarly, the visualization model performs a lookup in a unique edges list 207 to determine if a new edge already exists. If the new edge does not exist, it is added to the unique edges list 207 to form an updated edges list 209. A model event interface 210 accesses the nodes and edges lists and associated properties, and communicates with a visualization model interface 211, which creates views of a displayed model. The visualization model interface 211 may show different views 212, including a two-dimensional link chart, a three-dimensional visualization, a model explorer, a cross-database view and a data landscape view. A two-dimensional link chart is illustrated in Figure 11, where model edges 1104 represent similarity relationships between model nodes 1101, 1102, 1103, which represent a reference document 1101 and target documents 1102, 1103. Similarly, Figure 13 illustrates a three-dimensional link chart showing similarity relationships 1304 between nodes 1301, 1302, 1303. Figure 14 illustrates a three-dimensional similarity search result depicting similarity search scores for target document nodes 1402 and associated document attribute nodes 1401, 1403.

Figure 3 depicts the properties of each model node 301 and each model edge 302, which are described between page 11, line 236 and page 12, line 269. Considering the properties of the model node, Form Item identified the hierarchical document that the model node represents,

Link Count identifies how many model edges connect to the model node, Hidden Count identifies how many model edges associated with the model node are hidden for display purposes, Locked identifies whether a model node may be hidden from display, Color identifies the display color of the model node, Selected identifies the model node as being selected for processing, ID is a unique model node identifier, and hierarchical level identifies the position of the object represented by the model node within the hierarchy of objects displayed. Considering the model edge properties, From Node is a pointer to the starting node identified by the From Node ID, To Node is a pointer to the receiving end node identified by the To Node ID, Query List identifies criteria for establishing visual relationships of the model edge, Caption identifies any displayed caption associated with the model edge, Color identifies the displayed color of the model edge, ID provides a unique identifier to the model edge, Visible identifies whether the model edge is currently visible, and Selected identifies that the model edge is selected for processing.

6. ISSUE

The following issue is presented: Whether claims 1-25 are obvious under 35 U.S.C. § 103(a) as being unpatentable by Smith et al. (U.S. Patent No. 6,594,673) and Wheeler et al. (U.S. Patent No. 6,618,727).

7. GROUPING OF CLAIMS

For each ground of rejection that Applicants contests herein, which applies to more than one claim, such additional claims, to the extent separately identified and argued below, do not stand or fall together.

8. ARGUMENTS

Three sets of arguments are presented in the alternative in this Appeal Brief. The arguments include (1) disqualification of U.S. Patent 6,618,727 issued to Wheeler et al under 35

U.S.C. § 103(c), (2) the Office has failed to establish a *prima facie* case of obviousness, and (3) the claims are not obvious under the Graham factual inquiries.

8.1 DISQUALIFICATION AS PRIOR ART UNDER 35 U.S.C. § 103(c)

The reference of U.S. Patent No. 6,618,727 issued to Wheeler et al. (U.S. Patent Application No. 09/401,101) cited by the Office is incorporated by reference in the paragraph beginning on page 2, line 25 of the specification of the present application as filed. The current application has a file date of October 2, 2000. Infoglide Corporation is presently the assignee of record of the present application and the Wheeler patent.

The current U.S. Patent Application No. 09/677,476 and U.S. Patent No. 6,618,727 (U.S. Patent Application No. 09/401,101) were, at the time the invention of U.S. Application No. 09/677,476 was made, owned by or subject to an obligation of assignment to the same entity, namely Infoglide Corporation of Austin, Texas. Assignment recordation documents for these applications are on file in the U.S. Patent Office.

In response to the Final Office Action, Applicants disclaimed the terminal part of any patent granted on the instant application that would extend beyond the expiration date of U.S. Patent No. 6,618,727. Also included in the Final Office Action were an executed declaration of common ownership and a fee set forth under 37 CFR 1.20(d).

8.2 THE OFFICE HAS FAILED TO ESTABLISH A PRIMA FACIE CASE OF OBVIOUSNESS

The Office bears the initial burden of establishing a *prima facie* case of obviousness. *See In re Piasecki*, 223 USPQ785, 788 (Fed. Cir. 1984). To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary

skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991), MPEP § 2142 and § 2143. In addition, if an independent claim is found to be nonobvious, any claims that depend on the nonobvious independent claim are also nonobvious. The references of Smith et al and Wheeler et al cited by the Office do not teach or suggest all limitations of the independent claims 1, 4, 8, 13, 18 and 19 (previously presented) of the present invention specification. Furthermore, the references of Smith et al and Wheeler et al do not teach or suggest all limitations in the claims that are dependent in independent claims 1, 4, 8, 13, 18 and 19. Applicants believe that the Office has relied on undue reconstruction and hindsight to sustain the claim rejections. As discussed below, since all of the limitations of Applicants' claims are not found in the references cited by the Office, even if the references were combined, as suggested by the Office, the combination would not equal Applicants' claimed invention.

With regard to independent claim 1-25, the Office has rejected claims 1-25 under 35 U.S.C. § 103(a) as being unpatentable over Smith et al. (U.S. Patent 6,594,673) in view of Wheeler et al. (U.S. Patent 6,618,727). Claims 1-25 are not anticipated by Smith and Wheeler. First, Smith discloses the use of a database filter to obtain and measure a user-selected portion of the collaborative information. The Wheeler invention is not a database filter but a similarity search engine for determining a degree of similarity between hierarchical database objects. The Wheeler invention is distinguishable from a database filter, and therefore, it would not have been obvious for a person having ordinary skill in the art to substitute the similarity search function of

Wheeler for the database filter disclosed in the Smith reference (Smith does not disclose a generic search function). As described above in the description of the current invention, a similarity search engine will always provide indicia of similarity between 0.0% and 100.0%, even if it is 0.0%. According to the Smith reference, the collaborative database is data filtered (154 in Figure 8) to extract selected collaborative information based on message header information, including identifying cross-postings between newsgroups and the number of cross-postings between newsgroups. A database filter is binary in nature, whereby it will only return results in a pass band and will reject results in a stop band. A similarity search engine, as disclosed in the Wheeler reference, is distinguishable from and bears no correspondence to a database filter. Since the Wheeler disclosure is incorporated by reference into the present application, as filed, it appears that hindsight may be a factor in the conclusion drawn by the Office that it was obvious to combine the Wheeler and Smith references. The Office has not satisfied the requirement for citing some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. As noted above, the teaching or suggestion to make the claimed combination must be found in the prior art, and not based on applicant's disclosure, which includes the Wheeler reference.

Second, the Office has not provided a citation to demonstrate a reasonable expectation of success by combining Wheeler and Smith. In fact, without substantial construction and reconstruction, the combination of Wheeler and Smith would be inoperable and unsuccessful. As noted above, the reasonable expectation of success must be found in the prior art, and not based on applicant's disclosure. And lastly, the cited references of Wheeler and Smith fail to teach or suggest all the claim limitations of the Applicants' claimed invention. The Applicants believe

that claims 1-25 are not unpatentable over the cited references of Wheeler and Smith, and are nonobvious under 35 U.S.C. § 103(a).

Considering independent claims 1 and 18 (previously presented), the Smith and Wheeler references do not disclose a computer implemented visualization model of similarity relationships between documents. There is no disclosure in Smith of visualization of similarity relationships between documents, or of a generic search function.

Regarding the first elements of independent claims 1 and 18, the first elements include the limitation "performing a similarity search in a database based on at least one reference attribute of at least one reference document to find at least one target document with at least one target attribute having a similarity relationship to the at least one reference attribute". There is no disclosure in the Smith reference for performing a search. The Office citation in Smith (col. 8, lines 54-57) describes a database filter, which may function as a generally conventional relational database filter. Database filters are distinguishable from similarity search engines, as disclosed in the Wheeler reference, which is incorporated by reference into the present disclosure. The first element of independent claims 1 and 18 broadly describe the similarity search functions disclosed in the Wheeler reference incorporated into Applicants' disclosure. The assertion by the Office that a "database query" is the same as a "similarity search" is incorrect. A database query can be either a *select query* for data retrieval or an *action query* for performing additional operations on the data, such as insertion, updating, or deletion. A similarity search according to the Wheeler reference requires a search engine that searches a database to identify degrees of similarity between document attributes that are combined to form a degree of similarity between documents. For example, any number between 0.0% and 100.0% may

represent a degree of similarity, where 0.0% represents no similarity and 100.0% represents exact similarity.

Regarding the second elements of claims 1 and 18, the second elements of include the limitation "creating unique visualization model nodes corresponding to the at least one reference document and the at least one target document". The Smith reference does no disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of creating unique visualization model nodes corresponding to the at least one reference document and the at least one target document. There is no correspondence to or disclosure of Applicants' second element of claims 1 and 18 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 1 and 18 are unsupported by the cited references, and should be withdrawn.

Regarding the third elements of claims 1 and 18, the third elements include the limitation "assigning properties to the unique visualization model nodes including form item, link count, group ID, hidden count, locked, caption, color, hierarchical level, selected and ID". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 8, lines 9-10) merely states, "The message ID is a unique identifier for the post." There is no disclosure in the Smith or Wheeler reference of the claimed assigned properties to the unique visualization model

nodes. There is no correspondence to or disclosure of Applicants' third elements of claims 1 and 18 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 1 and 18 are unsupported by the cited references, and should be withdrawn.

Regarding the fourth elements of claims 1 and 18, the fourth elements include the limitation "creating unique visualization model edges corresponding to the similarity relationships between the at least one reference document and the at least one target document". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of creating unique visualization model edges corresponding to similarity relationships between the at least one reference document and the at least one target document. There is no correspondence to or disclosure of Applicants' fourth element of claims 1 and 18 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, the claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 1 and 18 are unsupported by the cited references, and should be withdrawn.

Regarding the fifth elements of claims 1 and 18, the fifth elements include the limitation "assigning properties to the unique visualization model edges including from node, from node

ID, to node, to node ID, query list, caption, color, visible, selected and ID". The Office citation in Smith (col. 8, lines 9-10) merely states, "The message ID is a unique identifier for the post." There is no disclosure in the Smith or Wheeler references of the claimed assigned properties to the unique visualization model edges. There is no correspondence to or disclosure of Applicants' fifth elements of claims 1 and 18 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 1 and 18 are unsupported by the cited references, and should be withdrawn.

Regarding the sixth elements of claims 1 and 18, the sixth elements of claims 1 and 18 include the limitation "displaying the unique visualization model nodes and the unique visualization model edges on a graphical user interface". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of displaying the unique visualization model nodes and the unique visualization model edges on a graphical user interface. There is no correspondence to or disclosure of Applicants' sixth elements of claims 1 and 18 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 1 and 18 are unsupported by the cited references, and should be withdrawn.

Regarding the seventh elements of claims 1 and 18, the seventh elements of claims 1 and 18 include the limitation "indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 9, lines 24-27) describes links nodes, such as links between core threads and other threads, may be indicated by the relative lengths of the links. There is no disclosure in the Smith or Wheeler reference of indicating a degree of similarity between visualization model nodes by the visualization model edges. There is no correspondence to or disclosure of Applicants' seventh elements of claims 1 and 18 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 1 and 18 are unsupported by the cited references, and should be withdrawn.

Considering dependent claims 2 (previously presented), 17 (original) and 22 (previously presented), Applicants believe that claims 2, 17 and 22 are not unpatentable over the cited references. Since claims 2, 17 and 22 are dependent on claim 1, which has been shown above to be nonobvious, claims 2, 17 and 22 are also nonobvious under 35 U.S.C. § 103(a). Therefore the rejections of claims 2, 17 and 22 are unsupported by the cited references, and should be withdrawn.

Considering dependent claim 3 (previously presented), Applicants believe that claim 3 is not unpatentable over the cited references. Since claim 3 is dependent on claim 1, which has been shown above to be nonobvious, claim 3 is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 3 is unsupported by the cited references, and should be withdrawn. Furthermore, claim 3 includes the limitations "wherein the similarity search returns a

result set of the at least one reference document, the at least one target document, and similarity relationships between the at least one reference document and the at least one target document that are used by the visualization model to create the unique visualization model nodes corresponding to the documents and the unique visualization model edges corresponding to the similarity relationships between the documents". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith or Wheeler reference of using the contents of the result set to create the unique visualization model nodes corresponding to the documents and the unique visualization model edges corresponding to the similarity relationships between the documents. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 3 is unsupported by the cited references, and should be withdrawn.

Considering independent claim 4 (previously presented), the abstract of the Smith reference does not disclose a computer-implemented interactive visualization model of similarity relationships between documents. There is no disclosure in Smith of visualization of similarity relationships between documents, or of a generic search function.

Regarding the first element of independent claim 4, the first element includes the limitation "using a similarity search performed on reference attributes of a reference document which results in a set of 0 to n target documents with target attributes having similarity relationships with the reference attribute". The Smith reference does not disclose performing a

search. The Office citation in Smith (Abstract) describes a database filter, which may function as a generally conventional relational database filter. Database filters are distinguishable from similarity search engines, as described above and as disclosed in the Wheeler reference, which is incorporated by reference into the present disclosure. A database filter is a program or section of code that is designed to examine each input or output request for certain qualifying criteria and then process or forward it accordingly. It is "pass-through" or "reject" code that takes input data, makes some specific decision about it and possible transformation of it, and passes it on to another program in a kind of pipeline, without performing any input/output operation on its own. The first element of independent claim 4 broadly describes the similarity search functions disclosed in the Wheeler reference incorporated into Applicants' disclosure. A similarity search according to the Wheeler reference requires a search engine that searches a database to identify degrees of similarity between document attributes that are combined to form a degree of similarity between documents. For example, any number between 0 and 1 may represent a degree of similarity, where 0 represents no similarity and 1 represents exact similarity.

Regarding the second element of independent claim 4, the second element of includes the limitation "creating visualization model nodes corresponding to the reference document and each target document". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of creating visualization model nodes

corresponding to the reference document and each target document. There is no correspondence to or disclosure of Applicants' second element of claim 4 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 4 is unsupported by the cited references, and should be withdrawn.

Regarding the third element of independent claim 4, the third element of claim 4 includes the limitation "performing a lookup on a unique nodes list for determining if the created visualization model nodes already exists, adding the created visualization model nodes to the unique nodes list if the created visualization model nodes are not on the unique nodes list, and designating the visualization model nodes on the unique nodes list as unique visualization model nodes". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 8, lines 8-18) describes a database filter for extracting selected information, and cross-postings between newsgroups. There is no disclosure in the Smith or Wheeler reference of the claimed lookup on a unique nodes list to determine if a visualization model node is unique. There is no correspondence to or disclosure of Applicants' third element of claim 4 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 4 is unsupported by the cited references, and should be withdrawn.

Regarding the fourth element of claim 4, the fourth element of claim 4 includes the limitation "creating visualization model edges corresponding to the similarity relationships between the reference document and each target document". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a

database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of creating visualization model edges corresponding to the similarity relationships between the reference document and each target document. There is no correspondence to or disclosure of Applicants' fourth element of claim 4 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 4 is unsupported by the cited references, and should be withdrawn.

Regarding the fifth element of claim 4, the fifth element of claim 4 includes the limitation "performing a lookup on a unique edges list for determining if the created visualization model edges already exists, adding the created visualization model edges to the unique edges list if the created visualization model edges are not on the unique edges list, and designating the visualization model edges on the unique edges list as unique visualization model edges". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 8, lines 8-18) describes a database filter for extracting selected information, and cross-postings between newsgroups. There is no disclosure in the Smith or Wheeler reference of the claimed lookup on a unique edges list to determine if a visualization model edge is unique. There is no correspondence to or disclosure of Applicants' fifth element of claim 4 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 4 is unsupported by the cited references, and should be withdrawn.

Regarding the sixth element of claim 4, the sixth element of claim 4 includes the limitation "displaying the unique visualization model nodes corresponding to the reference documents and each target document and the unique visualization model edges corresponding to the similarity relationships on a graphical user interface". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of displaying the unique visualization model nodes and the unique visualization model edges on a graphical user interface. There is no correspondence to or disclosure of Applicants' sixth element of claim 4 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 4 is unsupported by the cited references, and should be withdrawn.

Regarding the seventh element of claim 4, the seventh element of claim 4 includes the limitation "indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 9, lines 24-27) describes links between nodes, such as links between core threads and other threads, may be indicated by the relative lengths of the links. There is no disclosure in the Smith or Wheeler reference of indicating a degree of similarity between visualization model nodes by the visualization model edges. There is no

correspondence to or disclosure of Applicants' seventh element of claim 4 found in the Smith or Wheeler reference. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 4, as amended, is unsupported by the cited references, and should be withdrawn.

Considering dependent claims 5-7 (original), 20 (previously presented) and 23 (previously presented), Applicants believe that claims 5-7, 20 and 23 are not unpatentable over the cited references. Since claims 5-7, 20 and 23 are dependent on claim 4, which has been shown above to be nonobvious, claims 5-7, 20 and 23 are also nonobvious under 35 U.S.C. § 103(a). Therefore the rejections of claims 5-7, 20 and 23 are unsupported by the cited references, and should be withdrawn.

Considering independent claims 8 and 19 (previously presented), the Smith reference does not disclose a computer-implemented visualization model of similarities between documents. There is no disclosure in Smith of a visualization model of similarities between documents, or of a generic search function.

Regarding the first elements of independent claims 8 and 19, the first elements include the limitation "displaying a reference hierarchical object". The Smith reference does not disclose displaying a reference hierarchical object. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no

correspondence to or disclosure of Applicants' first elements of claims 8 and 19 found in the Smith reference. The first elements of independent claims 8 and 19 are broadly disclosed in the Wheeler reference incorporated into Applicants' disclosure

Regarding the second elements of claims 8 and 19, the second elements include the limitation "allowing a user to initiate a similarity search, based on at least one attribute of the reference hierarchical object, to find at least one target hierarchical object". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 8, lines 54-57) describes a database filter, which may function as a generally conventional relational database filter. Database filters are distinguishable from similarity search engines, as disclosed in the Wheeler reference, which is incorporated by reference into the present disclosure. A database filter is a program or section of code that is designed to examine each input or output request for certain qualifying criteria and then process or forward it accordingly. It is "pass-through" code that takes input data, makes some specific decision about it and possible transformation of it, and passes it on to another program in a kind of pipeline, without performing any input/output operation on its own. The first elements of independent claims 4 and 19 broadly describe the similarity search functions disclosed in the Wheeler reference incorporated into Applicants' disclosure. A similarity search according to the Wheeler reference requires a search engine that searches a database to identify degrees of similarity between document attributes that are combined to form a degree of similarity between documents. For example, any number between 0.0% and 100.0% may represent a degree of similarity, where 0.0% represents no similarity and 100.0% represents exact similarity. There is no correspondence to or disclosure of Applicants' second elements of claims 8 and 19 found in the Smith reference. The second elements of independent claims 8 and 18 are broadly disclosed in the Wheeler reference incorporated into Applicants' disclosure.

Regarding the third elements of claims 8 and 19, the third elements include the limitation "visually representing a unique visualization model reference node corresponding to the reference hierarchical object and a unique visualization model target node corresponding to the at least one target hierarchical object that meet a similarity search criteria". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of visually representing a unique visualization model reference node corresponding to the reference hierarchical object and a unique visualization model target node corresponding to the at least one target hierarchical object that meet a similarity search criteria. There is no correspondence to or disclosure of Applicants' third elements of claims 8 and 19 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 8 and 19 are unsupported by the cited references, and should be withdrawn.

Regarding the fourth elements of claims 8 and 19, the fourth elements include the limitation "visually representing a unique visualization model edge corresponding to a similarity relationship between the reference hierarchical object and each target hierarchical object". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to

results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of visually representing a unique visualization model edge corresponding to a similarity relationship between the reference hierarchical object and each target hierarchical object. There is no correspondence to or disclosure of Applicants' fourth elements of claims 8 and 19 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 8 and 19 are unsupported by the cited references, and should be withdrawn.

Regarding the fifth elements of claims 8 and 19, the fifth elements include the limitation "displaying the visual representations of the unique visualization model nodes and the unique visualization model edge on a graphical user interface". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of displaying the visual representation of the unique visualization model nodes and the unique visualization model edges on a graphical user interface. There is no correspondence to or disclosure of Applicants' fifth elements of claims 8 and 19 found in the Smith or Wheeler

references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 8 and 19 are unsupported by the cited references, and should be withdrawn.

Regarding the sixth elements of claims 8 and 19, the sixth elements include the limitation "indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 9, lines 24-27) describes links between nodes, such as links between core threads and other threads, may be indicated by the relative lengths of the links. There is no disclosure in the Smith or Wheeler references of indicating a degree of similarity between visualization model nodes by the visualization model edges. There is no correspondence to or disclosure of Applicants' sixth elements of claims 8 and 19 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claims, these claims are nonobvious under 35 U.S.C. § 103(a). Therefore, the rejections of claims 8 and 19 are unsupported by the cited references, and should be withdrawn.

Considering dependent claims 9 and 24 (previously presented), claims 9 and 24 are not unpatentable over the cited references. Since claims 9 and 24 are dependent on claim 8, which has been shown above to be nonobvious, claims 9 and 24 are also nonobvious under 35 U.S.C. § 103(a). Therefore the rejections of claims 9 and 24 are unsupported by the cited references, and should be withdrawn.

Regarding the first element of claim 9, the first element includes the limitations wherein the unique visualization model node comprises "a reference to the hierarchical object the model node represents". The Smith reference does not disclose this limitation. The Office citation in

Smith (col. 4, line 47 to col. 5, line 12) describes collaborative information represented as tabular information and as network diagrams or graphs. There is no disclosure in the Smith or Wheeler references of the unique visualization model node comprising a reference to the hierarchical object that the model node represents. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 9 is unsupported by the cited references, and should be withdrawn.

Regarding the second element of claim 9, the second element includes the limitations wherein the unique visualization model node comprises "a reference to at least one attribute of the hierarchical object used in the similarity search to determine if a unique visualization model edge exists". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 4, line 47 to col. 5, line 12) describes collaborative information represented as tabular information and as network diagrams or graphs. There is no disclosure in the Smith or Wheeler reference of the unique visualization model node comprising a reference to at least one attribute of the hierarchical object used in the similarity search to determine if a unique visualization model edge exists. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 9 is unsupported by the cited references, and should be withdrawn.

Regarding the third element of claim 9, the third element includes the limitations wherein the unique visualization model node comprises "visual properties of the hierarchical document the unique visualization model node represents". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 9, lines 24-52) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be

based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. Various format controls are described. There is no disclosure in the Smith or Wheeler reference of the unique visualization model node comprising visual properties of the hierarchical document the unique visualization model node represents. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 9 is unsupported by the cited references, and should be withdrawn.

Considering dependent claim 10 (previously presented), claim 10 is not unpatentable over the cited references. Since claim 10 is dependent on claims 8 and 9, which have been shown above to be nonobvious, claim 10 is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 10 is unsupported by the cited references, and should be withdrawn.

Furthermore, claim 10 includes the limitations "storing the visual representation of the unique visualization reference model node, each unique visualization target model node, and each unique visualization model edge in computer memory or on disk." The Smith reference does not disclose this limitation. The Office citation in Smith (col. 3, lines 51-63) merely lists various memory devices. There is no disclosure in the Smith or Wheeler references of storing the visual representation of the unique visualization reference model node, each unique visualization target model node, and each unique visualization model edge in computer memory or on disk. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 10 is unsupported by the cited references, and should be withdrawn.

Considering dependent claim 11 (previously presented), claim 11 is not unpatentable over the cited references. Since claim 11 is dependent on claim 8, which has been shown above to be

nonobvious, claim 11 is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 11 is unsupported by the cited references, and should be withdrawn.

Regarding the first element of claim 11, the first element includes the limitations wherein the unique visualization model edge comprises "an identifier of the unique visualization reference model node from which the visual representation of the unique visualization model edge will extend and an identifier of the at least one unique visualization_target model node to which the visual representation of the unique visualization model edge will extend". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 4, line 47 to col. 5, line 12) describes collaborative information represented as tabular information and as network diagrams or graphs. The second Office citation in Smith (col 9, lines 24-52) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. Various format controls are also described. There is no disclosure in the Smith or Wheeler reference of the unique visualization model edge comprises an identifier of the unique visualization reference model node from which the visual representation of the unique visualization model edge will extend and an identifier of the at least one unique visualization_target model node to which the visual representation of the unique visualization model edge will extend. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 11 is unsupported by the cited references, and should be withdrawn.

Regarding the second element of claim 11, the second element includes the limitations wherein the unique visualization model edge comprises "a list of the similarity search attributes

used in the similarity search". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 4, line 47 to col. 5, line 12) describes collaborative information represented as tabular information and as network diagrams or graphs. The second Office citation in Smith (col 9, lines 24-52) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. Various format controls are also described. There is no disclosure in the Smith or Wheeler references of the unique visualization model edge comprising a list of the similarity search attributes used in the similarity search. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 11 is unsupported by the cited references, and should be withdrawn.

Considering dependent claim 12 (original), claim 12 is not unpatentable over the cited references. Since claim 12 is dependent on claims 8 and 11, which have been shown above to be nonobvious, claim 12 is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 12 is unsupported by the cited references, and should be withdrawn.

Considering dependent claim 15 (previously presented), claim 15 is not unpatentable over the cited references. Since claim 15 is dependent on claim 8, which has been shown above to be nonobvious, claim 15 (currently amended) is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 15 is unsupported by the cited references, and should be withdrawn.

Furthermore, claim 15 includes the limitations "wherein each unique visualization model edge indicates a degree of similarity between the reference hierarchical object and the target

hierarchical object and is displayed as a line connecting unique visualization model nodes, said model nodes being depicted as geometric shapes on the graphical user interface." The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith or Wheeler reference of each unique visualization model edge indicating a degree of similarity between the reference hierarchical object and the target hierarchical object and is displayed as a line connecting unique visualization model nodes, said model nodes being depicted as geometric shapes on the graphical user interface. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 15 is unsupported by the cited references, and should be withdrawn.

Considering dependent claim 16 (previously presented), claim 16 is not unpatentable over the cited references. Since claim 16 is dependent on claims 8 and 15, which have been shown above to be nonobvious, claim 16 is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 16 is unsupported by the cited references, and should be withdrawn.

Furthermore, claim 16 includes the limitations "wherein the length of the line connecting the unique visualization model nodes varies as a function of the degree of similarity between the reference document and the target document referenced by the unique visualization model nodes." The Smith reference does not disclose this limitation. The Office citation in Smith (col.

9, lines 24-27) describe strengths of links between nodes in the visualization may be indicated by relative lengths of the links. There is no disclosure in the Smith or Wheeler references of varying the length of the lines connecting the unique visualization model nodes as a function of the degree of similarity between the reference document and the target document referenced by the unique visualization model nodes. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 16 is unsupported by the cited references, and should be withdrawn.

Considering independent claim 13 (previously presented), the Office is incorrect in the assertion that the abstract of the Smith reference discloses a computer-implemented method of visualizing similarity relationships between documents. There is no disclosure in Smith of a computer-implemented method of visualizing similarity relationships between documents, or of a generic search function.

Regarding the first and second elements of independent claim 13, the first and second elements include the limitations "using a reference hierarchical document, performing a similarity search based on user selected attributes of the reference hierarchical document and determining a result set of target documents comprising 0 to n hierarchical documents". The Smith reference does not disclose performing a search. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked

nodes. There is no disclosure in the Smith or Wheeler references of each unique visualization model edge indicating a degree of similarity between the reference hierarchical object and the target hierarchical object and is displayed as a line connecting unique visualization model nodes, said model nodes being depicted as geometric shapes on the graphical user interface. The first and second elements of independent claim 13 broadly describes the similarity search functions disclosed in the Wheeler reference incorporated into Applicants' disclosure.

Regarding the third element of claim 13, the third element of includes the limitation "converting each hierarchical document to a unique visualization model node that visually represents each hierarchical document to be displayed on a graphical user interface". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of converting each hierarchical document to a unique visualization model node that visually represents each hierarchical document to be displayed on a graphical user interface. There is no correspondence to or disclosure of Applicants' third element of claim 13 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 13 is unsupported by the cited references, and should be withdrawn.

Regarding the fourth element of claim 13, the fourth element of claim 13 includes the limitation "using the similarity search results, creating a unique visualization model edge that visually represents the similarities between the reference hierarchical document and each hierarchical document in the result set to be displayed on a graphical user interface". The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith reference of using the similarity search results, creating a unique visualization model edge that visually represents the similarities between the reference hierarchical document and each hierarchical document in the result set to be displayed on a graphical user interface. There is no correspondence to or disclosure of Applicants' fourth element of claim 13 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 13, is unsupported by the cited references, and should be withdrawn.

Regarding the fifth element of claim 13, the fifth element of claim 13 includes the limitation "indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges". The Smith reference does not disclose this limitation. The Office citation in Smith (col. 9, lines 24-27) describe strengths of links between nodes in the visualization may be indicated by relative lengths of the links. There is no

disclosure in the Smith or Wheeler references of varying the length of the lines connecting the unique visualization model nodes as a function of the degree of similarity between the reference document and the target document referenced by the unique visualization model nodes. There is no correspondence to or disclosure of Applicants' fifth element of claim 13 found in the Smith or Wheeler references. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 13 is unsupported by the cited references, and should be withdrawn.

Considering dependent claim 14 (previously presented), claim 14 is not unpatentable over the cited references. Since claim 14 is dependent on claim 13, which has been shown above to be nonobvious, claim 14 is also nonobvious under 35 U.S.C. § 103(a). Therefore the rejection of claim 14 is unsupported by the cited references, and should be withdrawn.

Furthermore, claim 14 includes the limitations "displaying the unique visualization model edge and the unique visualization model node on a graphical user interface." The Smith reference does not disclose this limitation. The first Office citation in Smith (col. 8, lines 64-67) describes a rendering engine that renders a network graphical visualization according to results obtained by a database filter and user selections. The second Office citation in Smith (col. 9, lines 24-40) describes the strength of links between nodes in the visualization indicted by relative lengths of the links. The links may be based on a spring-based model representing forces between nodes, or the number of posters who post messages to the linked nodes. There is no disclosure in the Smith or Wheeler references of displaying the unique visualization model edge and the unique visualization model node on a graphical user interface. Since the cited prior art references fail to teach or suggest all the limitations of the Applicants' claim, this claim is nonobvious under 35 U.S.C. § 103(a). Therefore, the rejection of claim 14 is unsupported by the

cited references, and should be withdrawn.

Considering dependent claims 21 and 25 (previously presented), claims 21 and 25 are not unpatentable over the cited references. Since claims 21 and 25 are dependent on claim 13, which has been shown above to be nonobvious, claim 21 and 25 are also nonobvious under 35 U.S.C. § 103(a). Therefore the rejections of claims 21 and 25 are unsupported by the cited references, and should be withdrawn.

8.3 THE CLAIMS ARE NOT OBVIOUS UNDER THE GRAHAM FACTUAL INQUIRIES

8.3.1 Summary of Applicant's Invention

The invention is a computer-implemented visualization model showing hierarchical documents and similarity relationships between the documents. Figure 1 depicts a high level flow diagram of the method according to the current invention, and is described on page 7, line 42 through page 9, line 193 of the specification. As described in relation to Figure 1, a user identifies a reference document and associated reference attributes or fields 101, determines a need to find target documents and associated attributes 102 having similarity relationships with the reference document and associated attributes, develops an appropriate search criteria and submits the search criteria to a query manager 103. The query manager initiates a similarity search 104, using a similarity search engine, of one or more target databases to find at least one target document and associated target attribute that have a similarity relationship with the reference document and reference attribute, respectively. The similarity search engine returns a similarity search result set designating at least one target document and associated target attribute 105 along with similarity relationships between the reference document and the target document based on similarities in the documents' attributes. The designated target documents are sent to a visualization model 106, where the target document is represented as a model node 108. The

result set is also sent to the visualization model 107, where each similarity relationship is represented as a model edge 109. A model edge is an entity in a visualization model that relates to connections (representing similarity relationships) between two documents, such as a reference document and a target document. The visualization model then displays the model nodes, including the node representing the reference document, connected by the model edges 110. In a preferred embodiment of the disclosed invention, the similarity search engine used is disclosed in U.S. Patent Application No. 09/401,101, issued as U.S. Patent No 6,618,727 by Wheeler et al.

Regarding the similarity search result set, containing a similarity search result score, it should be noted that the Wheeler reference incorporated by reference into Applicants' specification performs a similarity search between a reference document having at least one reference attribute and one or more target documents having at least one target attribute stored in one or more databases. The returned similarity search result set 105 in Figure 1 of the current specification includes a similarity search score between the reference document and the one or more target documents that may be indicated by any designated contiguous range of numbers, such as between 0.0% and 100.0%. This parameter of the similarity search result set is illustrated in Figure 25 and described in column 20, lines 36-47 of the Wheeler reference. Figure 25 shows a side-by-side comparison of the similarity search results between a first anchor document 340 (Primary Key 003) and a second document (Primary Key 001). As shown in the Score column 341, the similarity score between the anchor document and the second document is 33.33%, while the similarity score between the anchor document and all offender documents is 29.56%.

The above description in the Wheeler reference corresponds to the description of Figure 14 of the current specification described between page 20, line 445 and page 21, line 469 of the

current specification. In particular, on page 21, lines 461-468 of the current specification describe an application of a similarity search score that increases as one moves up the Z-axis of Figure 14. The top of the Z-axis represents a 100% similarity score between the reference or anchor document and the target documents, and between the attributes of the reference or anchor document and the attributes of the target documents. The degrees of similarity (represented by model edges) between the model nodes 1402 are calculated relative to each other, and the heights of the blocks along the Z-axis are represented of the degree of similarity.

It is pointed out that a similarity search may always provide a search result, even though the search result may indicate a 0.0% degree of similarity between documents. A filter, such as a database filter, provides a binary output, in that it rejects all documents in a stop band and passes all documents in a pass band. There is no correlation between a database filter and a similarity search engine.

Figure 2 depicts the visualization modeling process illustrated in Figure 1 as reference 110. Figure 2 is described on page 9, line 194 through page 11, line 235 of the specification. As described in relation to Figure 2, representations of the hierarchical target documents received from the similarity search engine and the reference document 202 are represented as model nodes 203 by the visualization model. The visualization model performs a lookup in a unique nodes list 206 to determine if a new node already exists. If the new node does not exist, it is added to the unique nodes list 206 to form an updated nodes list 208. Similarly, the visualization model performs a lookup in a unique edges list 207 to determine if a new edge already exists. If the new edge does not exist, it is added to the unique edges list 207 to form an updated edges list 209. A model event interface 210 accesses the nodes and edges lists and associated properties, and communicates with a visualization model interface 211, which creates views of a displayed

model. The visualization model interface 211 may show different views 212, including a two-dimensional link chart, a three-dimensional visualization, a model explorer, a cross-database view and a data landscape view. A two-dimensional link chart is illustrated in Figure 11, where model edges 1104 represent similarity relationships between model nodes 1101, 1102, 1103, which represent a reference document 1101 and target documents 1102, 1103. Similarly, Figure 13 illustrates a three-dimensional link chart showing similarity relationships 1304 between nodes 1301, 1302, 1303. Figure 14 illustrates a three-dimensional similarity search result depicting similarity search scores for target document nodes 1402 and associated document attribute nodes 1401, 1403.

Figure 3 depicts the properties of each model node 301 and each model edge 302, which are described between page 11, line 236 and page 12, line 269. Considering the properties of the model node, Form Item identified the hierarchical document that the model node represents, Link Count identifies how many model edges connect to the model node, Hidden Count identifies how many model edges associated with the model node are hidden for display purposes, Locked identifies whether a model node may be hidden from display, Color identifies the display color of the model node, Selected identifies the model node as being selected for processing, ID is a unique model node identifier, and hierarchical level identifies the position of the object represented by the model node within the hierarchy of objects displayed. Considering the model edge properties, From Node is a pointer to the starting node identified by the From Node ID, To Node is a pointer to the receiving end node identified by the To Node ID, Query List identifies criteria for establishing visual relationships of the model edge, Caption identifies any displayed caption associated with the model edge, Color identifies the displayed color of the model edge, ID provides a unique identifier to the model edge, Visible identifies whether the

model edge is currently visible, and Selected identifies that the model edge is selected for processing.

8.3.2 Scope and Contents of the Cited Art

In rejecting Applicant's claims 1-25 under 35 U.S.C. § 103(a), the Office has cited U.S. Patent No. 6,594,637 by Smith et al and U.S. Patent No. 6,618,727 by Wheeler et al.

U.S. Patent No. 6,594,637 by Smith et al.

The cited reference of Smith discloses a visualization method for collaborative information that provides visualization of relationships or connections in the collaborative information. The specification describes several examples of linked collaborative information. Figure 2, described between column 4, line 63 and column 5, line 12 of the Smith specification, depicts object nodes representing books, purchased according to TABLE 1, connected by links, where each link represent the number of times a person purchases each of the two books represented by nodes connected to each end of the link. The length of the links represent the frequency or number of times the link connected books were purchased, where the shorter lines represent stronger links or a higher purchase rate. Similarly, Figure 3, described in column 5, lines 13-31 of the Smith specification, depicts object nodes representing people, according to TABLE 1, connected by links, where each link represents the number of times the same books were purchased by the persons represented by nodes connected to each end of the link. Similar to Figure 2, the length of the links represent the frequency or number of times the link connected books were purchased, where the shorter lines represent stronger links or a higher purchase rate.

Analogous to Figure 2, Figure 4, described in column 6 lines 4-33 of the Smith specification, depicts newsgroups as nodes 102, 106 connected by links 104, 108, where each link represent cross-posts of threaded messages between newsgroups connected to each end of a

link 104, 108. The relative strength of each link 104, 108 is represented by its length, which is determined by the number of cross-posts between each newsgroup node 102, 106. Typically, the threaded message posts are email messages formed as bulletin boards on the Internet. The strength of the links may be derived from the threaded message headers, which include routing, categorization and authorship, including email address and name of the poster of the threaded message, organization, subject of post, other posts and posters referenced, time, date, and length of post.

Analogous to Figure 3, Figure 5, described in column 6, lines 33-59 of the Smith reference, depicts newsgroup links 114, 118 connected between threads 112, 116, where each link represents the number of posters who post messages to the linked threads 112, 116 connected to each end of the link 114, 118. The relative strength of each link 114, 118 is represented by its length, which is determined by the number of cross-posts between each linked thread 112, 116. As above, the threaded message posts are typically email messages formed as bulletin boards on the Internet. The strength of the links may be derived from the threaded message headers, which include routing, categorization and authorship, including email address and name of the poster of the threaded message, organization, subject of post, other posts and posters referenced, time, date, and length of post.

Figure 8, described between column 7, line 46 and column 8, line 48, depicts a flow diagram indicative of the visualization process, represented by claim 1. A database is acquired for collaborative information 152, where information is obtained from the header of each posting or message in a selected set of newsgroups. The information obtained from the message headers typically include routing, categorization and authorship, including email address and name of the poster of the threaded message, organization, subject of post, other posts and posters referenced,

time, date, and length of post. The database is then data filtered 154 to extract selected collaborative information based on header information, including identifying cross-postings between newsgroups and the number of cross-postings between newsgroups. A visualization is generated 156 based on the filtered set of collaborative information and user selected format and style. The visualization is then rendered on a display screen 158. A query block 160 (a decision block not related to an SQL query statement) determines whether a modification to the visualization is selected, and if so, control is returned to the visualization rendering 158. Otherwise, another query block 162 determines whether the selected visualization or style has been selected, whereby the data filter 154 is adjusted accordingly. Otherwise, the visualization style is applied to the visualization 164.

U.S. Patent No. 6,618,727 by Wheeler et al.

The cited reference by Wheeler is a system and computer-implemented method for performing similarity searching that detects and scores similarities between documents in a source database and a search criterion. It uses a hierarchy of parent and child categories to be searched, linking each child category with its parent category. Source database documents are converted into hierarchical database documents having parent and child objects with data values organized using the hierarchy of parent and child categories to be searched. For each child object, a child object score is calculated that is a quantitative measurement of the similarity between the hierarchical database documents and the search criteria and a parent object score are computed from its child object scores. See Column 2, lines 8-21 of the Wheeler specification. In the context of object-oriented software principles, child and parent objects of the present invention may be arranged in a hierarchical structure of objects, whereby a parent object may comprise one or more child objects that bear a relationship to the parent objects. Leaf objects are

child objects that cannot be readily decomposed further into lower level child objects. Figures 2-4 of the specification illustrate hierarchical structure examples of parent/child objects.

According to the Wheeler reference, the user defines in a schema 60 shown in Figure 10, as described below, the topical and structural relationship or relevance between user selected parent and child objects 61. The user includes these relationships in the search criteria or schema 70, shown in Figure 11. See Figures 2-4; column 7, lines 10-15 and lines 27-38. The similarity search does not determine these topical or structural relationships. They are more apt to be dictated by the problem being solved. In the present invention, the topical and structural relationships are known *a priori*. In contrast to conventional search engines, the Wheeler similarity search engine invention provides a measure of similarity 63 between a search criteria and objects in a source database. For example, the quantitative measure of similarity may be a number having a value of between 0.0% and 100.0%, where 100.0% would indicate an exact match and 0.0% would indicate no matching characteristics whatsoever. Of course, other upper and lower limits, or percentages may be used to express a degree of similarity. See column 12, lines 1-18 of the specification. For an example of determining a measure of similarity 72, a similarity search engine, according to the Wheeler invention, may use a search criterion of "John" to search source database objects. A similarity search result may indicate that the objects containing "John" have a similarity score of 100.0%, that objects containing "Jon" have a similarity score of 90.0%, that objects containing "Juan" have a similarity score of 80.0%, that objects containing "Joan" have a similarity score of 40.0%, and that objects containing "Alex" have a similarity score of 0.0%. In any of the examples, weighting factors may be applied to modify or emphasize specific resultant measures at each level of a hierarchical structure.

The method of similarity searching according to the present invention is a process of determining how similar or dissimilar data objects are to a search criterion. The method comprises creating a schema by a user, 60 in Figure 10, processing a schema, 110 in Figure 14, importing a document, 140 in Figure 16, query execution and scoring, 180 in Figure 17and 325 in Figure 24, and returning results of a search to a user, Figure 25.

An indexing structure referred to as a schema is created by a user that links parent and child objects. A search criteria is defined by a user in the schema that identifies the parent and child object instances to be searched and the search algorithms to be used. Referring to Figure 10, a schema chosen or created by a user 60 is used to translate and structure source documents containing data objects to be searched into a hierarchical structure of related objects when a source database is imported into the search system. The user creates a hierarchy of parent/child objects to be searched 61 and defines weighting factors, 73 in Figure 11, for each parent/child object 62. The user defines default scoring measures, 72, 76 and 77 in Figure 11, to be used to similarity search the lowest level child or leaf object 63. The user also defines the parent object score computing or choice algorithm, 74 and 78 in Figure 11, for each parent object 64. The user may define other items 65, 75 and 79 in Figure 11, and may save the created schema and send the created schema to the similarity search engine 66.

Referring to Figure 14, processing a schema 110 comprises compiling the schema commands into instructions 111, creating a relative ID table 112, creating data and relation bands for the schema 113, creating a document table to store imported user documents 114, and creating relative Ids in the relative ID table to map between the relative Ids and the system ID for the user documents 115.

The present similarity search engine invention must first translate a source database into a hierarchical database having identified child and parent objects that correspond to object categories that a user wants to search. Referring to Figure 16, importing a document 140 comprises compiling an import command 145, updating relative ID tables to reflect any new Ids 147, document annotation to include relative Ids assigned to components 148, executing the compiled import command to populate the data/relative ID table and relation bands 149, storing the annotated document in the document table 150 and associating the IDs and relative Ids in the relative ID/ID table 151.

Using the defined search criteria, the similarity search engine searches the source database documents, identifies the child objects having no descendants, and calculates a similarity score using algorithmic or generator methods for each identified child object to produce a quantitative measurement of similarity between the search criteria and the identified child objects. The similarity search engine then computes parent object scores from the related child object scores using a parent score or "choice" computing algorithm. Referring to Figure 17, query execution and scoring 180 comprises compiling a search query into instructions for scoring, score selection and reporting 181, performing similarity scoring between the leaf object nodes of the search criteria and the search document using specified measures 182, perform parent object score computing using specified parent score computing algorithms 183 (see Figure 20), a result of the scoring is a collection of relative ID score pairs constrained by reporting instructions 184, finding corresponding IDs for each relative ID by searching the relative ID/ID table 185, and retrieving documents associated with each ID, which is sent to the user 186. An alternate functional description of the scoring between two documents, one of which may be a search criteria, Figure 24 performs a document compare 325 that comprises finding leaf object

nodes in a query search document 326, searching a second document using search criteria leaf nodes 327, and if a corresponding entry in the second document is found 328, calculating a similarity score for leaf node or child objects 329 using a scoring measure algorithm. This process is repeated until no more leaf nodes are found 330, whereby the parent score is computed using the parent score computing algorithm 331 until all parent scores have been computed 332.

The algorithmic scoring methods may be selected from the group of algorithms comprising text oriented, sound coding, string difference, name, foreign name, numeric oriented, numbered difference, ranges, numeric combination, range combination, fuzzy, date oriented, date to range, date difference, and date combination, 77 in Figure 11. The generator scoring methods may be selected from the group of algorithms comprising exact, name equivalents, and foreign name equivalents, 76 in Figure 11. The parent scoring computing algorithm may be selected from the group comprising single best, greedy sum, overall sum, greedy minimum, overall minimum, and overall maximum, 78 in Figure 11 and Figure 20.

Referring to Figure 25, Figure 25 shows an example of a graphical user interface displaying the results of a document comparison similarity search. An anchor document 340 is shown along with scores 341 that represent the similarity search results as specified by scoring methods specified in a schema or query.

8.3.3 Differences Between the Cited Art and the Independent Claims in Issue

Regarding the differences between the Wheeler patent and the claims in issue, the Wheeler patent issued from an application that was incorporated by reference into the present application in the paragraph beginning on page 2, line 25 of the specification as filed. It is admitted that some of the elements of the claims in issue are drawn directly from the Wheeler patent. However, as discussed above in section 8.1, Applicants claim benefit under 35 U.S.C. §

103(c), since the current application has a file date of October 2, 2000 and the both the current invention and the Wheeler patent are presently assigned to Infoglide Corporation. In Applicants' response to the final Office Action, Applicants disclaimed the terminal part of any patent granted on the current application that would extend beyond the expiration date of the Wheeler patent, and submitted an executed declaration of common ownership.

There exist many distinguishable differences between Smith reference cited by the Office and claims in issue of the current application. These differences derive from the objective of the Smith reference vis-à-vis the current application. The objective of the Smith reference is visualization of selected interactive collaborative information derived from threaded message information, typically derived from email message headers sent to Internet newsgroups or bulletin boards. The collaborative information is discrete or exact in nature and is derived from filtering data from a database containing collaborative information to measure a selected portion of the information. The objective of the current application is to visually represent hierarchical database objects or documents, and to visually represent the similarity relationships between these documents. The documents selected for visualization are based on similarity indicia between documents that are returned from a similarity search engine. The similarity indicia are analog or fuzzy in nature, and may take on many different values, depending on the similarity relationships between documents, which is derived from the similarity between attributes or fields of the documents.

Consider the first elements of independent claims 1 and 18 of the current specification, "performing a similarity search in a database based on at least one reference attribute of at least one reference document to find at least one target document with at least one target attribute having a similarity relationship to the at least one reference attribute". While this element is

admittedly disclosed in the Wheeler patent, there is no explicit, implicit, or inherent disclosure of this element in the Smith reference. This element discloses sub-elements of similarity searches, similarity relationships, database, reference and target documents, and attributes of reference and target documents. The only one of these sub-elements disclosed in the Smith reference is a database. The Smith reference discloses a database for the collaborative information 152 and a database filter to extract selected information 154 from the database, such as cross-postings between newsgroups and the number of cross-postings between newsgroups, as disclosed in column 8, lines 11-18. Database filters are used to pass data that fall within a pass-band or user-specified range of data and to reject data that falls outside the user-specified data range. Database filters are structurally and functionally distinguishable from similarity search engines, as disclosed in the Wheeler reference.

The preceding discussion of differences between the Smith reference regarding the first elements of independent claims 1 and 18 are also applicable to the first element of independent claim 4, and the first and second elements of independent claims 8, 13 and 19.

Consider the second elements of independent claims 1 and 18 of the current specification, "creating unique visualization model nodes corresponding to the at least one reference document and the at least one target document". This element reflects network graph terminology similar to that used in the Smith reference, including nodes and links connecting nodes used to describe Figures 2-7 of the Smith reference. However, there is no explicit, implicit, or inherent disclosure of reference documents and target documents in the Smith reference. These sub-elements represent structural and functional differences between the Smith reference and the claims in issue. The newsgroups, threads and posters disclosed in the Smith reference have no correspondence to reference documents and target documents found in the claims in issue.

The preceding discussion of differences between the Smith reference regarding the second elements of independent claims 1 and 18 are also applicable to the second element of independent claim 4, and the third elements of independent claims 8, 13 and 19.

Consider the third elements of independent claims 1 and 18 of the current specification, "assigning properties to the unique visualization model nodes including form item, link count, group ID, hidden count, locked, caption, color, hierarchical level, selected and ID". The Smith reference discloses the use of contrasting display characteristics such as color, size, shape and display consistency in the description of Figure 7, and the use of Message-ID in relation to the description of Figure 8. However, there is no explicit, implicit, or inherent disclosure in the Smith reference of assigning properties to nodes such as form item, link count, group ID, hidden count, locked, caption, hierarchical level and selected. These sub-elements represent structural and functional differences between the Smith reference and the claims in issue.

Consider the fourth elements of independent claims 1 and 18 of the current specification, "creating unique visualization model edges corresponding to the similarity relationships between the at least one reference document and the at least one target document." This element reflects network graph terminology similar to that used in the Smith reference, including nodes and links connecting nodes used to describe Figures 2-7 of the Smith reference. Applicants' model edges may be considered to be equivalent to the links disclosed in the Smith reference. However, there is no explicit, implicit, or inherent disclosure of links (model edges) corresponding to similarity relationships between reference and target documents in the Smith reference. These sub-elements represent structural and functional differences between the Smith reference and the claims in issue. The newsgroups, threads and posters disclosed in the Smith reference have no

correspondence to reference documents, target documents and similarity relationships found in the claims in issue.

The preceding discussion of differences between the Smith reference regarding the fourth elements of independent claims 1 and 18 are also applicable to the fourth elements of independent claims 4, 8, 13 and 19.

Consider the fifth elements of independent claims 1 and 18 of the current specification, "assigning properties to the unique visualization model edges including from node, from node ID, to node, to node ID, query list, caption, color, visible, selected and ID". The Smith reference discloses the use of contrasting display characteristics such as color, size, shape and display consistency in the description of Figure 7, and the use of Message-ID in relation to the description of Figure 8. However, there is no explicit, implicit, or inherent disclosure in the Smith reference of assigning properties to links or model edges such as from node, from node ID, to node, to node ID, query list, caption, visible and selected. These sub-elements represent structural and functional differences between the Smith reference and the claims in issue.

Consider the sixth elements of independent claims 1 and 18 of the current specification, "displaying the unique visualization model nodes and the unique visualization model edges on a graphical user interface". This element reflects network graph terminology similar to that used in the Smith reference, including nodes and links connecting nodes used to describe Figures 2-7 of the Smith reference. However, there are functional differences between the meanings represented by the links and nodes described in the Smith Reference, and the meanings represented by the edges and nodes contained in the claims in issue. The newsgroups, threads and posters disclosed in the Smith reference as being represented by nodes and links have no correspondence to

reference documents, target documents and similarity relationships between documents found in the claims in issue.

The preceding discussion of differences between the Smith reference regarding the sixth elements of independent claims 1 and 18 are also applicable to the sixth element of independent claim 4, and the fifth elements of independent claims 8 and 19.

Consider the seventh elements of independent claims 1 and 18 of the current specification, "indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges". This element reflects network graph terminology similar to that used in the Smith reference, including nodes and links connecting nodes used to describe Figures 2-7 of the Smith reference. Applicants' model edges may be considered to be equivalent to the links disclosed in the Smith reference. However, there is no explicit, implicit, or inherent disclosure of links (unique visualization model edges) indicating a degree of similarity between unique visualization nodes. These sub-elements represent structural and functional differences between the Smith reference and the claims in issue. The newsgroups, threads and posters disclosed in the Smith reference as being represented by nodes and links have no correspondence to reference documents, target documents and similarity relationships represented by nodes and edges found in the claims in issue.

The preceding discussion of differences between the Smith reference regarding the seventh elements of independent claims 1 and 18 are also applicable to the seventh element of independent claim 4, the sixth elements of independent claims 8 and 19, and the fifth element of independent claim 13.

Consider the third and fifth elements of independent claim 4 of the current specification, "performing a lookup on a unique nodes list for determining if the created visualization model

nodes already exists, adding the created visualization model nodes to the unique nodes list if the created visualization model nodes are not on the unique nodes list, and designating the visualization model nodes on the unique nodes list as unique visualization model nodes", and "performing a lookup on a unique edges list for determining if the created visualization model edges already exists, adding the created visualization model edges to the unique edges list if the created visualization model edges are not on the unique edges list, and designating the visualization model edges on the unique edges list as unique visualization model edges". There is no explicit, implicit, or inherent disclosure of these elements in the Smith reference. These elements represent structural and functional differences between the Smith reference and the claims in issue.

8.3.4 The Level of Ordinary Skill in the Pertinent Art

A person of ordinary skill in the pertinent art would be one knowledgeable in claims processing requirements for fraud detection by insurance institutions as well as security requirements by government agencies and database information providers having an understanding of software processes relating to database searching applications.

8.3.5 Evidence of a Commercially Successful Solution to a Long Felt Need

Prior to the introduction of Applicants' invention into the commercial marketplace, Investigators were forced to rely mostly on inferior, labor intensive techniques, often driven by excel spreadsheets and access to compendiums and other research material. Historically, the conventional search methods used by insurance and security personnel have included some combination of search training and education, document standardization, exact or binary search techniques, and production initiated query procedures.

Applicants' claimed invention provides a solution to this long felt need by enabling a user with comprehensive automated similarity search and display solutions that are capable of detecting fraud and aliases on a database "watch list". The products are capable of similarity searching databases for detection of data inconsistencies and hidden relationships that other search technologies cannot find. Applicants' invention enable search and display technology products that allow a user to investigate records that require detailed analysis. The products that make use of the capability of displaying similarity searched documents and similarity relationships between these documents makes it easy for the user to thoroughly examine the connections between people, places, and events using refined searches, data comparisons, analysis tools, and visual features.

Infoglide Software Corporation, formerly Infoglide Corporation is the assignee of Applicants' claimed invention. As evidence of the commercial success of the present disclosed invention, attached in Appendix B is a letter from the Chief Executive Officer of Infoglide Software Corporation describing the commercial success of the invention and the nexus of the claimed invention to its commercial success.

8.3.6 Results of the Graham Factual Inquiries

The results of the Graham inquiries discussed above show patentable and nonobvious distinctions between Applicant's claimed invention the references of Smith and Wheeler cited by the Office. Furthermore, as evidence of secondary considerations, evidence is submitted that shows Applicant's claimed invention is commercially successful solution to a long felt need. Therefore, since the present claimed invention has been shown to be nonobvious, the rejections of Applicant's claims 1-25 should be withdrawn and the claims allowed to issue.

9. SUMMARY

The responses detailed above rebut the assertions by the Office of the obviousness of Applicant's invention, and substantiate the nonobviousness of claims 1-25 under 35 U.S.C. § 103(a). Arguments have been presented in the alternative, including (1) disqualification of U.S. Patent 6,618,727 issued to Wheeler et al under 35 U.S.C. § 103(c), (2) the Office has failed to establish a *prima facie* case of obviousness, and (3) the claims are not obvious under the Graham factual inquiries. Applicants respectfully request reversal of all rejections and that the application allowed to issue.

Respectfully Submitted,

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Date

Douglas D. Russell, Reg. No. 40,152
Attorney for Applicants

TAYLOR RUSSELL & RUSSELL, P.C.
4807 Spicewood Springs Road
Building Two Suite 250
Austin, Texas 78759-8435
Tel. 512-338-4601
Fax. 512-338-4651
Email: drussell@russell-law.com

APPENDIX A

Claims on Appeal

1. (previously presented) A computer-implemented visualization model of similarity relationships between documents comprising:

performing a similarity search in a database based on at least one reference attribute of at least one reference document to find at least one target document with at least one target attribute having a similarity relationship to the at least one reference attribute;

creating unique visualization model nodes corresponding to the at least one reference document and the at least one target document;

assigning properties to the unique visualization model nodes including form item, link count, group ID, hidden count, locked, caption, color, hierarchical level, selected and ID;

creating unique visualization model edges corresponding to the similarity relationships between the at least one reference document and the at least one target document;

assigning properties to the unique visualization model edges including from node, from node ID, to node, to node ID, query list, caption, color, visible, selected and ID;

displaying the unique visualization model nodes and the unique visualization model edges on a graphical user interface; and

indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges.

2. (previously presented) The method according to claim 1 wherein the at least one target document that is similarity searched reside in a plurality of databases.

3. (previously presented) The method according to claim 1 wherein the similarity search returns a result set of the at least one reference document, the at least one document, and similarity relationships between the at least one reference document and the at least one target document

that are used by the visualization model to create the unique visualization model nodes corresponding to the documents and the unique visualization model edges corresponding to the similarity relationships between the documents.

4. (previously presented) A computer-implemented interactive visualization model of similarity relationships between documents comprising:

using a similarity search performed on reference attributes of a reference document which results in a set of 0 to n target documents with target attributes having similarity relationships with the reference attributes;

creating visualization model nodes corresponding to the reference document and each target document;

performing a lookup on a unique nodes list for determining if the created visualization model nodes already exists, adding the created visualization model nodes to the unique nodes list if the created visualization model nodes are not on the unique nodes list, and designating the visualization model nodes on the unique nodes list as unique visualization model nodes;

creating visualization model edges corresponding to the similarity relationships between the reference document and each target document;

performing a lookup on a unique edges list for determining if the created visualization model edges already exists, adding the created visualization model edges to the unique edges list if the created visualization model edges are not on the unique edges list, and designating the visualization model edges on the unique edges list as unique visualization model edges;

displaying the unique visualization model nodes corresponding to the reference

documents and each target document and the unique visualization model edges corresponding to the similarity relationships on a graphical user interface; and

indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges.

5. (original) The method of claim 4 further comprising allowing a user using the graphical user interface to initiate the similarity search and select attributes of the reference document to be used in the similarity search.

6. (original) The method of claim 4, further comprising allowing a user using the graphical user interface to choose any attributes of the reference document to be used in the similarity search.

7. (original) The method of claim 6 further comprising using attributes of a target document as a source for a new search.

8. (previously presented) A computer-implemented visualization model of similarities between documents comprising:

displaying a reference hierarchical object;

allowing a user to initiate a similarity search, based on at least one attribute of the reference hierarchical object, to find at least one target hierarchical object;

visually representing a unique visualization model reference node corresponding to the reference hierarchical object and a unique visualization model target node corresponding to the at least one target hierarchical object that meet a similarity search criteria;

visually representing a unique visualization model edge corresponding to a similarity relationship between the reference hierarchical object and each target hierarchical object;

displaying the visual representations of the unique visualization model nodes and the unique visualization model edge on a graphical user interface; and

indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges.

9. (previously presented) The method according to claim 8 wherein the unique visualization model node comprises:

a reference to the hierarchical object the model node represents;

a reference to at least one attribute of the hierarchical object used in the similarity search to determine if a unique visualization model edge exists; and

visual properties of the hierarchical document the unique visualization model node represents.

10. (previously presented) The method according to claim 8 further comprising storing the visual representation of the unique visualization reference model node, each unique visualization target model node, and each unique visualization model edge in computer memory or on disk.

11. (previously presented) The method according to claim 8 wherein the unique visualization model edge comprises:

an identifier of the unique visualization reference model node from which the visual representation of the unique visualization model edge will extend and an identifier of the at least one unique visualization target model node to which the visual representation of the unique visualization model edge will extend; and

a list of the similarity search attributes used in the similarity search.

12 (original) The method according to claim 11 further comprising user chosen attributes to be used in the similarity search.

13. (previously presented) A computer-implemented method of visualizing similarity relationships between documents comprising:

using a reference hierarchical document;

performing a similarity search based on user selected attributes of the reference hierarchical document and determining a result set of target documents comprising 0 to n hierarchical documents;

converting each hierarchical document to a unique visualization model node that visually represents each hierarchical document to be displayed on a graphical user interface;

using the similarity search results, creating a unique visualization model edge that visually represents the similarities between the reference hierarchical document and each hierarchical document in the result set to be displayed on a graphical user interface; and

indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges.

14. (previously presented) The method of claim 13 further comprising displaying the unique visualization model edge and the unique visualization model node on a graphical user interface.

15. (previously presented) The method of claim 8, wherein each unique visualization model edge indicates a degree of similarity between the reference hierarchical object and the target hierarchical object and is displayed as a line connecting unique visualization model nodes, said model nodes being depicted as geometric shapes on the graphical user interface.

16. (previously presented) The method of claim 15, wherein the length of the line connecting the unique visualization model nodes varies as a function of the degree of similarity between the reference document and the target document referenced by the unique visualization model nodes.

17. (original) The method of claim 1, wherein the visual representation is three dimensional.

18. (previously presented) A computer-readable medium containing instructions for a visualization model of similarity relationships between documents comprising:

performing a similarity search in a database based on at least one reference attribute of ~~a~~ at least one reference document to find at least one target document with at least one target attribute having a similarity relationship to the at least one reference document;

creating unique visualization model nodes corresponding to the at least one reference document and the at least one target document;

assigning properties to the unique visualization model nodes including form item, link count, group ID, hidden count, locked, caption, color, hierarchical level, selected and ID;

creating unique visualization model edges corresponding to the similarity relationships

between the at least one reference document and the at least one target document;

assigning properties to the unique visualization model edges including from node, from node ID, to node, to node ID, query list, caption, color, visible, selected and ID;

displaying the unique visualization model nodes and the unique visualization model edges on a graphical user interface; and

indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges.

19. (previously presented) A computer-readable medium containing instructions for a visualization model of similarities between documents comprising:

displaying a reference hierarchical object;

allowing a user to initiate a similarity search, based on at least one attribute of the reference hierarchical object, to find at least one target hierarchical object;

visually representing a unique visualization model reference node corresponding to the reference hierarchical object and a unique visualization model target node corresponding to the at least one target hierarchical object that meet a similarity search criteria;

visually representing a unique visualization model edge corresponding to a similarity relationship between the reference hierarchical object and each target hierarchical object;

displaying the visual representations of the unique visualization model nodes and the unique visualization model edge on a graphical user interface; and

indicating a degree of similarity between the displayed unique visualization model nodes by the displayed unique visualization model edges.

20. (previously presented) A computer-readable medium containing instructions for a computer-

implemented interactive visualization model of similarity relationships between documents according to the steps of claim 4.

21. (previously presented) A computer-readable medium containing instructions for a computer-implemented method of visualizing relationships between documents according to the steps of claim 13.

22. (previously presented) The method of claim 1, wherein the visualization model is selected from the group consisting of a two dimensional link chart visualization, a three dimensional visualization, a model explorer visualization, a cross database visualization, and a data landscape visualization.

23. (previously presented) The method of claim 4, wherein the visualization model is selected from the group consisting of a two dimensional link chart visualization, a three dimensional visualization, a model explorer visualization, a cross database visualization, and a data landscape visualization.

24. (previously presented) The method of claim 8, wherein the visualization model is selected from the group consisting of a two dimensional link chart visualization, a three dimensional visualization, a model explorer visualization, a cross database visualization, and a data landscape visualization.

25. (previously presented) The method of claim 13, wherein the visualization model is selected from the group consisting of a two dimensional link chart visualization, a three dimensional visualization, a model explorer visualization, a cross database visualization, and a data landscape visualization.

APPENDIX B

INFOGLIDE
SOFTWARE

May 31, 2005

To Whom It May Concern:

During its brief history, Infoglide Software Corporation (formerly Infoglide Corporation) has achieved significant commercial success with its similarity search solutions. These solutions include the ability to find and display similarity-searched documents and the similarity relationships between searched documents on a graphical user interface. The company has contracts to provide similarity search and display solutions to Secure Flight application for US Department of Homeland Security, User Identity alias & registration fraud application for eBay, and Insurance claims fraud and investigation application for MAIF.

In addition, Infoglide has executed agreements to provide the same technology to Iowa Insurance Federation and the Leicestershire Constabulary of the East Midlands Police, United Kingdom For example, Infoglide is not aware of any other company who has a contract to provide this similarity search and display technology to US department of Homeland Security, thus it's likely that Infoglide has the dominant market share.

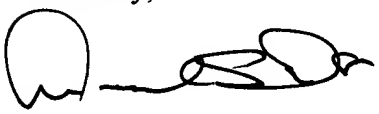
Infoglide provides the security and insurance industries with comprehensive automated similarity search and display solutions that is capable of detecting fraud and aliases on a database "watch list". The products are capable of similarity searching multiple disparate databases for detection of data inconsistencies and hidden relationships that other search technology cannot find. It offers similarity search technology for fuzzy, multiple-attribute searching and scoring for providing better fraud or risk detection results, which allows companies to make better-informed business decisions.

Infoglide's search and display technology products allow a user to investigate records that require detailed analysis. The products that make use of the capability of displaying similarity searched documents and the similarity relationships between these documents makes it easy for the user to thoroughly examine the connections between people, places, and/or events using refined searches, data comparisons, analysis tools, and visualization features.

Prior to the introduction of the Infoglide's similarity search and related display technology, investigators were forced to rely mostly on inferior, labor intensive techniques, often driven by excel spreadsheets and/or access to compendiums and other research material. Historically, the conventional search methods used by insurance and security personnel have included some combination of search training and education, document standardization, exact or binary search techniques, and production initiated query procedures.

Infoglide integrates its similarity search and display solutions seamlessly with a customer's system, similarity searching routinely entered data, so that each newly entered document is similarity searched and a user is then automatically notified via the user interface for display of similarity searched documents and the similarity relationships between the searched documents. The user can initiate a more detailed similarity search through a user interface, or automatic protocols can be established.

Sincerely,



Michael Shultz
President
Infoglide Software Corporation